TRANSCRIPT

Planting the Seeds for CCSS-M, Part 3

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So this is KOA that is in the kindergarten, which talks about cardinality. And then help students to see that the variety of…like if it's 7, is this 5 and 2, or 3 and 4, 1 and 6, rather than just ordinality. If you only know that the ordinal number, the 7, is after 6 and before 8, that's it. However, if you see this subitizing, and then also the cardinality really understand, you can decompose numbers. So the kindergarten, that is something you want to help students to do a lot of activities and games and then [become] fully comfortable to compose/decompose numbers up to 10.

So if students have a good sense, number sense, rich number sense, addition up to 10 shouldn't be a problem. They can automatize this process. If you look at 7+3: "Oh, I understand that 10 is 7 and 3 so this is going to be 10." What we should do in the first grade? 1.OA.6—Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten, decomposing number leading to ten, using the relationship between addition and subtraction knowing this…blah, blah, blah. So actually, Common Core expects students to be able to think mathematically to find a solution, rather than simply memorizing.

So, for example, again, let's begin with like a concrete situation. Yuka (it's a Japanese kid's name)…and Yuka collected 9 acorns and then Hiroshi collected 4, how many did they get altogether? Of course, you can count on: 9, 10, 11, 13, 14, 15—it's too much? Kind of like that, you can do this. You can even add up on your fingers, right? But it's tedious. So let's see. Counting every time is hard, isn't it? Can you do it without counting? How can you do that? By using prior knowledge, which is problem solving, right? Of course, you can do by using fingers to count, but without counting, how to find this? Students have never seen it before, right? Let them struggle.

What student might do? If they say, "I have no idea, I cannot do it," that is showing/ demonstrating their lack of ability for problem solving. Or some students might say, "Well, I need one more to make 9 to 10," right? So the 4 is 1 and 3. I'm going to give you 1 to 9 so that it becomes 10. So it's going to be 13. You don't have to count one by one, right? Like this. And some kids say that way. However, some other students have no idea what he is thinking or talking about. So how can you explain? Why don't you bring blocks to help your friend to see what is in your head? So then I did it this way to make 10, right?

[Pause to Practice]

So if you go through this process, if you remember, if you memorize 7+8 is 15—if you forget, forget, right? But if you go through this process, even if you forget, you can recreate this. That is conceptual understanding; you can reproduce. So just memorizing tons of addition tables, that is hard; but to go through this process and then repeat until they automatize, which is different from memorization and automatization.

Memorization—just like nowadays you don't have to memorize any telephone number. Like asking a student to memorize 10 telephone numbers; if you forget, you forget. Even the up to 10, a single-digit addition and subtraction, students should be able to count by fingers; however, it helps students to move away from this one and then helps them to be able to think. In order to do so, kindergarten is so important. For the kindergarten students should be able to compose/decompose numbers very comfortably through concrete activities. So everything is connected. So, therefore, I say, putting a seed. The young, like pre-kindergarten, kindergarten, first grade, is so important. If you do not put a good seed, nothing will grow, right? So you have a huge responsibility putting a good seed. So what is a good seed? Not like a bunch of seeds; it's the important one.

Well, thank you very much.